

### **REMARKS**

Claims 9 and 31-34 and 36-38 are all the claims pending in the application.

Support for newly added claims 37 and 38 may be found in the specification as originally filed, for example, in original multiple dependent claim 35 and at page 55, lines 28 to 32 in the specification.

As set forth in further detail below in the discussions of the specific rejections, Miyamura et al discloses a solder resist composition. The solder resist comprises an inorganic filler such as silica (col. 5, lines 39 to 43). However, Miyamura et al does not teach P atom-containing epoxy resin. Accordingly, even if Reed, Kenji et al and Miyamura et al is combined, it is not obvious to use “P atom-containing epoxy resin having bivalent phosphoric acid residue and epoxy groups in both terminals of the epoxy resin” or “P atom-containing epoxy resin having a monovalent phosphoric acid residue in one terminal of the P atom-containing epoxy resin and an epoxy group in the other terminal of the P atom-containing epoxy resin”. The present invention is not rendered obvious over these references.

#### **I. The Objection to Claims 31 and 33**

Applicants have made the changes to claims 31 and 33 requested by the Examiner. Applicants note that most of the changes are the same as those approved in the Examiner’s Amendment dated March 15, 2005. Additionally, for clarity, grammatical changes have been made to claims 31, 33 and 35. It is respectfully submitted that Applicants’ claims are clear and definite and it is requested that the objection to claims 31 and 33 be reconsidered and withdrawn.

**II. The Rejected under 35 U.S.C. § 103**

Claims 31 and 33 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Reed in view of Kenji.

Applicants respectfully submit that the present invention is not anticipated by or obvious over the disclosures of Reed in view of Kenji and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

According to claims 31 and 33 the present invention, the solder resist layer contains a P atom-containing epoxy resin. The P atom-containing epoxy resin has bivalent phosphoric acid residue and has epoxy groups in both terminals (claims 31), or has a monovalent phosphoric acid residue in one terminal and an epoxy group in the other terminal (claim 33).

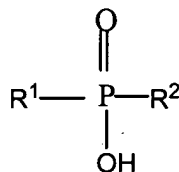
The claimed multilayer printed circuit board with the solder resist layer contains a P atom-containing epoxy resin which unexpectedly provides a multilayered printed circuit board with excellent flame retardancy (see page 55, lines 1 to 8, of Applicants' specification). Further, since the epoxy resin has excellent close adhesion strength, the adhesion strength between the solder resist layer and the conductor circuit is high (see page 55, lines 9 to 14, of Applicants' specification).

Reed discloses a multilayer circuit board. The insulative substrate 16 has, on both sides, the conductor patterns (12 and 14) and the insulating layers (22 and 24). The solder mask 46 is screened on both sides. As admitted by the Examiner, Reed does not teach or disclose Applicants' claimed multilayer circuit board with P atom-containing epoxy resin.

The Examiner states that "Kenji et al. teaches a phosphorus containing epoxy resin as shown in formulas 1-2." Kenji et al discloses a phosphorus containing epoxy resin. However,

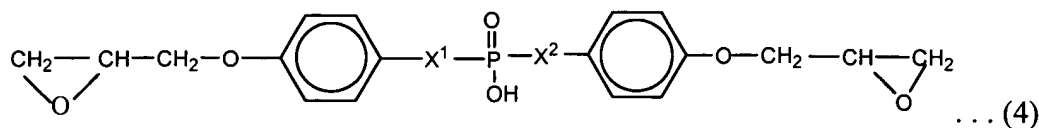
the epoxy resin of Kenji et al (formula (I)) is not included within the scope of the epoxy resin defined in claims 31 or 33. That is, the epoxy resin of Kenji et al is not a “P atom-containing epoxy resin which has a bivalent phosphoric acid residue and has epoxy groups in both terminals of the epoxy resin” or a “P atom-containing epoxy resin having a monovalent phosphoric acid residue in one terminal of the p atom-containing epoxy resin and an epoxy group in the other terminal of the P atom-containing epoxy resin”. As shown in the formula (I) of Kenji et al, the epoxy resin of Kenji et al does not have a phosphoric acid residue. Further, the number of chemicals bonded to the phosphorus is 3.

On the other hand, as to claim 31, examples of a epoxy resin which has a bivalent phosphoric acid residue and has epoxy groups in both terminals include P atom-containing epoxy resins having the general formula

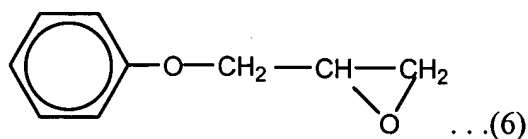


where the  $\text{R}^1$  and  $\text{R}^2$  independently represent substituents that contain epoxy groups.

A non-limiting example of a p atom containing epoxy resin having a bivalent phosphoric acid residue and has epoxy groups in both terminals is the following genereral formula [4] (wherein  $\text{X}^1$  and  $\text{X}^2$  respectively represent O or a single bond).

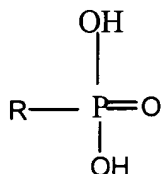


In the epoxy resins having the foregoing general formula [4], the compounds bonded to the phosphoric acid residue have the following chemical formula [6]:



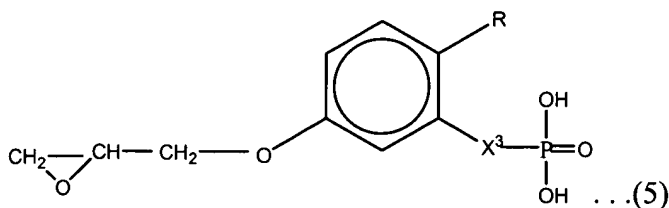
and the number of the bonded compounds is 2.

Further, as to claim 33, examples of the epoxy resin having a monovalent phosphoric acid residue in one terminal and an epoxy group in the other terminal include P atom-containing epoxy resins having the general formula



where the “R” group represents a substituent that contains an epoxy group.

A non-limiting example of a p atom containing epoxy resin having a monovalent phosphoric acid residue in one terminal and an epoxy group in the other terminal is following general formula [5] (wherein X<sup>3</sup> represents O or a single bond and R represents an alkyl of 2 to 8 carbons).



In the epoxy resins defined with the foregoing general formula [5], the number of the compound having an epoxy group and being bonded to the phosphoric acid residue is 1.

Kenji et al neither teaches nor suggests “P atom-containing epoxy resin having bivalent phosphoric acid residue and epoxy groups in both terminals of the epoxy resin” and “P atom-

containing epoxy resin having a monovalent phosphoric acid residue in one terminal of the P atom-containing epoxy resin and an epoxy group in the other terminal of the P atom-containing epoxy resin". Further, there is no motivation found in Kenji et al to use these epoxy resins. Therefore, it is not obvious from Kenji et al to obtain the epoxy resins according to the present invention and thus, even if Kenji et al is combined with Reed, Applicants' claimed invention is not taught or disclosed.

For the above reasons, it is respectfully submitted that the subject matter of claims 31 and 33 is neither taught by nor made obvious from the disclosures of Reed and Kenji, either alone or in combination, and it is requested that the rejection under 35 U.S.C. §103(a) be reconsidered and withdrawn.

**III. The Rejected under 35 U.S.C. § 103**

Claims 35 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Reed in view of Kenji and further in view of Miyamura et al.

Claim 35 has been canceled. Therefore, the rejection of claim 35 is moot.

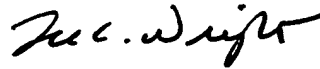
**IV. Conclusion**

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the objection to the claims and the rejections under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Lee C. Wright  
Registration No. 41,441

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: December 2, 2005